

# SREB



## Planning for Improved Student Achievement

*Ten Steps for Planning and Writing  
Standards-Based Units*

Southern  
Regional  
Education  
Board

592 10th St. N.W.  
Atlanta, GA 30318  
(404) 875-9211  
[www.sreb.org](http://www.sreb.org)

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This publication was developed by Betty Harbin, *HSTW* School Improvement consultant, and Gene Bottoms, SREB senior vice president. It was reviewed by a team of SREB staff members and consultants, including Lois Barnes, director, State Services for School Improvement; Patricia Clark, literacy consultant; and Renee Murray, School Improvement consultant.

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## Introduction

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Nothing matters more in the battle to improve student achievement than the teaching and learning that takes place in the classroom. There can be changes in leadership, changes in professional development opportunities and changes in schedules; but what matters most is a well-prepared teacher effectively engaging students in meaningful and intellectually challenging instruction.

The question is: How can teachers engage students in challenging and meaningful learning that also effectively addresses state and local standards? To address this question *High Schools That Work (HSTW)* developed this comprehensive guide to aid teachers in planning and writing standards-based lessons and units. It explains what standards-based units look like, how they work, and how they can be developed using a 10-step process and these guiding actions:

- **Use national, state and local standards to promote what students need to know and be able to do in the 21st century.** Standards-based unit planning provides a method for purposefully aligning standards to classroom activities, assignments and assessments. During the pilot of this process, administrators and teachers implementing this practice noticed a shift in the school's focus to curriculum and instructional practices. One high school principal observed, "standards-based units seem to change the focus from teaching to learning."
- **Raise the level of assignments and assessments and teach critical thinking.** Standards-based planning focuses instruction on developing rigorous and meaningful lessons that engage students in critical thinking and learning. Teachers develop daily plans that encourage higher-level thinking and help students achieve at or above grade level. Teams of teachers work together to create units, encouraging self- and peer-review to increase the quality of teacher assignment and student work. One middle grades teacher said, "since we now know how to do real standards-based planning, all of us will be expected to plan at higher levels."
- **Connect classwork to the real world.** When students can connect classroom content and assignments to previous information and real-world goals, they find relevance in learning and are motivated to succeed. A 12th-grader who struggled with mathematics throughout high school explained how a standards-based mathematics course helped him better understand the course content: "The class made me think and I learned more in that course than in all my other math courses in high school. I actually could see how each day's lesson connected to other lessons." Teachers develop daily lessons and unit plans that are not tied solely to textbooks. Assignments and assessments allow students to solve real-life problems.
- **Embed literacy strategies and habits of success in all lessons.** Schools with high student achievement embed reading and writing strategies into classroom instruction to engage students in mastering the language of the discipline. Standards-based planning requires teachers to identify the specific literacy strategies and habits of success their students need and incorporate these into every unit to help students develop time management, study and relationship skills.
- **Use a variety of learning styles that build on the diversity and strengths of students.** Standards-based unit planning encourages the use of multiple types of assignments and assessments to address multiple learning styles and provide the personal attention students need in order to succeed. The unit and daily plans ask teachers to use a variety of strategies. The unit format allows teachers to quickly review types of strategies planned for the unit and ensure that daily plans meet the needs of all students, especially those with special needs.

Teachers come into the standards-based unit development process with varying levels of experience and expertise. This guide is organized to accommodate all educators, from novices to those with experience in planning standards-based units. The 10 steps provide a basic outline for the planning process. For those who would like further information, the appendices provide additional resources and more in-depth explanations of the steps.

## Planning a Standards-Based Unit

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### *Why take the time to plan standards-based units?*

Over the past 20 years, SREB staff members have visited hundreds of middle grades and high school classrooms. Observations from these visits reveal that, while most schools have gone through a process for mapping, prioritizing and aligning standards, few have developed a process for ensuring classroom assignments and assessments meet grade-level standards. Using data from school visits and state and national assessments, *HSTW* concluded that schools need a process to assist them in aligning instruction to *grade-level* standards using research-based strategies.

Results from the 2005 National Assessment of Educational Progress (NAEP) show that, nationally, students are not making significant academic progress in reading, mathematics or science. Twelfth-grade students' scores on the reading and science assessments declined between 1992 and 2005, and less than one-fourth of students achieved at or above the Proficient level on the 12th-grade mathematics assessment. One explanation for these stagnant and declining scores is the level to which teachers are teaching. When teachers hold students to minimum standards — which are often set below grade level — these low or basic expectations lead to low student achievement. A large percentage of students leave grade eight unprepared for challenging high school studies. Many 12th-graders are not prepared to succeed in postsecondary studies or to enter and progress in a high-demand, high-paying career.

To determine how curriculum standards are addressed, the *HSTW* Assessment asks 12th-graders if their courses repeated content they had previously learned. On the 2006 *HSTW* Assessment, more than 66 percent of seniors reported that courses sometimes or often repeated content. Seniors were also asked about literacy skills and reading requirements in various classes. Twenty percent reported reading only one book per year and demonstrating understanding of the significance of the main idea. Fourteen percent reported never reading a book outside of class. More than one-third of students reported never or seldom practicing silent reading in English classes. Many teachers are not using reading and writing strategies effectively to raise student achievement.

To get significantly more students achieving at or above grade level, teachers must be clear about what grade-level learning looks like. Once they have defined grade-level proficiency, schools and teachers can develop a purposeful instructional plan that engages and motivates students to achieve at the appropriate level. Implementing such instructional plans is essential to improving student learning.

In 2006, the National High School Center reported that teachers at high-performing schools focus on strategies that ensure academic rigor, particularly in core content areas. These teachers use guides to stay on track and align courses to standards, rather than simply teaching from the textbook. Standards-based planning provides such a strategy to help teachers avoid the common one-standard-per-day practice, to establish accountability for what they are required to teach, and to assist them in identifying the most important content and skills.

When teachers “begin with the end in mind” — planning lessons by first determining the desired outcomes — they have greater assurance that the daily and weekly activities are building on the final assessment and that students can master the essential content and skills embedded in the standards. “I’ll never go back to the way I used to plan,” one high school science teacher noted after implementing standards-based units. “My students are so excited about their work, and test scores show a marked improvement in comprehension and retention.” Planning standards-based lessons and units takes time, but can result in engaging, grade-level instruction and improved student achievement.

## *What is a standards-based unit?*

Standards are the clear articulation of what students should know (content standards) and be able to do (performance standards) after completing a unit. **This guide defines a standards-based unit as an instructional plan that deliberately focuses on a group of prioritized standards and uses essential questions, pre- and post-assessments, and a daily sequence of engaging instructional activities to teach the standards during a specified time.**

Standards-based units go beyond traditional learning activities by using lessons that engage students in applying new knowledge and skills to complete real-world projects. Students completing a unit clearly see the connections to day-to-day living through application of information. This planning approach aligns instruction with grade-level assignments and assessments to help all students achieve at the proficient and advanced levels. Standards-based units promote engaging, challenging student work through carefully designed lessons.

Standards-based units encourage **teachers** to:

- prepare high-interest, student-centered lessons at or above grade level.
- gain confidence in their ability to teach at high levels and in students' abilities to learn at high levels.
- plan for multiple outcomes by using research-based practices that engage students in meeting standards.
- provide a prescriptive method to determine extra-help and enrichment opportunities for students.
- analyze the effectiveness of lesson plans and adjust or reteach to improve student achievement.
- identify, organize, plan and allocate resources for best results.

Standards-Based units and lessons encourage **students** to:

- achieve at or above grade level.
- acquire and analyze information and apply it to new situations.
- solve problems similar to those found in the community and workplace.
- use the most advantageous learning strategies.
- use a variety of technologies.
- engage in group work to master the material.

## *Getting Started: Understanding the Vocabulary*

Unit planning is new to many teachers, and the unit plan template is significantly different from the lesson plan format used in most schools. Before beginning the planning process, it is important to understand the common vocabulary associated with standards-based unit planning.

- **Benchmarks:** specific learning — measured at particular intervals — expected of students performing at grade level.
- **Curriculum:** the instructional framework that ensures standards (through their performance task indicators) are evident in the content, taught in the classroom and measured through classroom-based assessments. The curriculum includes resources needed to teach in a manner that results in students' mastery of the standard. A **curriculum map** includes the processes and skills, the content (essential concepts and topics), and the tasks (products, performances and problems) that assess learning.
- **Content standards:** definitions of the knowledge and skills students should acquire within a specific course (differ from process standards, defined below). Content standards define what concepts students should learn and understand within a course.
- **Exemplars:** samples of student work that exemplify different levels of performance according to the rubric.

- **Paper-and-pencil assessment:** traditional test used by teachers to determine the content knowledge and skills learned by students, from below- to above-level proficiency. Paper-and-pencil assessments often include multiple choice, fill-in-the-blank and constructed response questions.
- **Post-assessment:** a formative evaluation of student mastery and effectiveness of instructional strategies. The assessment should be administered at the conclusion of the unit and can also be used as a pre-assessment tool to determine prerequisites. The post-assessment consists of two parts: a paper and pencil assessment and a product-, performance- or problem-based assessment.
- **Process standards:** definitions of the ways in which students will apply the knowledge and skills required by the content standards.
- **Product-, performance- or problem-based assessment:** an evaluation that requires students to demonstrate application content knowledge. This assessment requires students to apply, analyze, synthesize and evaluate content and process standards in real-world situations.
  - **Performance:** a set of related tasks that students complete to help them make meaning of essential content and skills and to communicate mastery to teachers.
  - **Problem:** a complex question or challenge to be solved by students, requiring application of content and evidence of understanding.
  - **Product:** an object, model, display or other visual or written representation that communicates student mastery.
- **Proficiency:** the attainment of a standard or established benchmark at varying levels, such as Basic, Proficient and Advanced. Students scoring at the Proficient or Advanced levels (at or above grade level) are more likely to succeed at the next academic level.

Sample Process Standards		
English/ Language Arts	Mathematics	Science
<ul style="list-style-type: none"> <li>■ Summarizing</li> <li>■ Paraphrasing</li> <li>■ Inferring</li> <li>■ Categorizing</li> <li>■ Predicting</li> <li>■ Recognizing content vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>■ Problem solving</li> <li>■ Reading and communicating</li> <li>■ Estimating and verifying</li> <li>■ Logical reasoning</li> <li>■ Using technology</li> </ul>	<ul style="list-style-type: none"> <li>■ Designing and conducting scientific investigations</li> <li>■ Analyzing findings</li> <li>■ Communicating and defending findings</li> <li>■ Evaluating other investigations</li> </ul>

Proficiency Levels			
	Basic	Proficient	Advanced
<b>Performance</b>	Partial mastery of prerequisite knowledge	Solid academic performance; mastery of standards	Superior academic performance; mastery of honors-level work
<b>Grade level</b>	Approaching grade level	At grade level	Above grade level
<b>Assignments and assessments require students to:</b>	remember information and make simple inferences and explanations	apply and analyze information learned, defend ideas and draw conclusions	evaluate and create further work and exploration of information learned

- **Readiness indicators:** definitions of the essential content knowledge and skills students need to advance to the next academic level.
- **Rubrics:** descriptions of specific criteria that indicate student proficiency at various levels for a task or set of tasks.

## Criteria of an Effective Standards-Based Unit

The following rubric lists five characteristics of an effective standards-based unit — focus, instruction, rigor, evaluation and cohesiveness — and describes the criteria at various levels of quality. These criteria help teachers evaluate the overall effectiveness of a unit.

The rankings listed across the rubric encourage teachers to review the unit and revise as needed to improve rigor and quality. In training sessions, teachers use the rubric to identify strengths and weaknesses in newly developed units. Teachers are encouraged to use the rubric as a peer-review tool to improve lessons.

Rubric for Developing Standards-Based Units				
Criteria	Exemplary	Sufficient	Getting There	Not Yet
<b>Focus</b>	<ul style="list-style-type: none"> <li>Clearly defines themes that will challenge students at varying levels of achievement</li> <li>Targets manageable number of appropriate standards and indicators</li> <li>Includes significant content, processes and skills</li> <li>Clearly identifies what should be learned, why it is important and how it relates to real-life</li> </ul>	<ul style="list-style-type: none"> <li>Defines theme for study</li> <li>Targets manageable number of appropriate standards and indicators</li> <li>Includes significant content, processes and skills</li> <li>Identifies what should be learned and why it is important</li> </ul>	<ul style="list-style-type: none"> <li>Defines theme for study, but with an unclear focus</li> <li>States appropriate standards and indicators, but includes an unmanageable number</li> <li>Includes content, processes and skills</li> <li>Identifies what should be learned, but does not clearly communicate its importance</li> </ul>	<ul style="list-style-type: none"> <li>Identifies a narrow topic</li> <li>States inappropriate learning standards and indicators</li> <li>Includes unrelated content, processes and skills</li> <li>Identifies random and disconnected learning</li> </ul>
<b>Instruction</b>	<ul style="list-style-type: none"> <li>Uses a variety of research-based instructional strategies</li> <li>Requires students to use a variety of resources</li> <li>Provides active, student-centered learning</li> <li>Provides meaningful practice that supports the learning focus</li> <li>Requires students to study from multiple perspectives</li> </ul>	<ul style="list-style-type: none"> <li>Uses a variety of instructional strategies</li> <li>Requires students to use several resources</li> <li>Provides some active, student-centered learning</li> <li>Provides some practice that supports the learning focus</li> <li>Requires students to analyze a topic in-depth</li> </ul>	<ul style="list-style-type: none"> <li>Uses traditional, mostly teacher-centered instructional strategies</li> <li>Requires students to use few resources</li> <li>Provides some student-centered learning</li> <li>Provides little practice that supports the learning focus</li> <li>Requires some independent study of a topic</li> </ul>	<ul style="list-style-type: none"> <li>Uses limited variety of instructional strategies</li> <li>Requires little use of resources</li> <li>Provides minimal student-centered learning</li> <li>Provides practices that do not support the learning focus</li> <li>Requires no independent study of a topic</li> </ul>
<b>Rigor</b>	<ul style="list-style-type: none"> <li>Requires use of higher-order thinking skills</li> <li>Matches proficient-level indicators</li> </ul>	<ul style="list-style-type: none"> <li>Requires mostly analysis as the highest-order skill</li> <li>Matches basic- and proficient-level indicators</li> </ul>	<ul style="list-style-type: none"> <li>Provides mostly recall-level tasks</li> <li>Matches basic-level indicators</li> </ul>	<ul style="list-style-type: none"> <li>Provides only recall-level tasks</li> <li>Fails to meet basic-level indicators</li> </ul>



Criteria	Exemplary	Sufficient	Getting There	Not Yet
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>■ Uses a variety of performance assessments</li> <li>■ Includes well-defined, relevant assessments that are evaluated by appropriate audiences</li> <li>■ Includes continuous evaluation that provides feedback for students</li> <li>■ Measures student progress using established criteria</li> </ul>	<ul style="list-style-type: none"> <li>■ Uses performance assessments</li> <li>■ Includes relevant assessments that are evaluated by an audience</li> <li>■ Provides continuous student evaluation</li> <li>■ Measures student progress using established criteria.</li> </ul>	<ul style="list-style-type: none"> <li>■ Uses few performance assessments</li> <li>■ Includes relevant assessments that are evaluated by teachers and/or peers</li> <li>■ Measures student progress periodically</li> <li>■ Does not communicate criteria for assessment</li> </ul>	<ul style="list-style-type: none"> <li>■ Does not include performance assessments</li> <li>■ Includes assessments that are not relevant</li> <li>■ Does not measure student progress during the unit</li> <li>■ Does not establish criteria for assessment</li> </ul>
<b>Cohesiveness</b>	<ul style="list-style-type: none"> <li>■ Connects all components</li> <li>■ Unifies instruction and assessment</li> <li>■ Connects all assessments appropriately to the learning focus</li> </ul>	<ul style="list-style-type: none"> <li>■ Connects most components</li> <li>■ Links instruction and assessment</li> <li>■ Connects all assessments to the learning focus</li> </ul>	<ul style="list-style-type: none"> <li>■ Connects some components</li> <li>■ Has incidental matches between assessment and instruction</li> <li>■ Connects some assessments to the learning focus</li> </ul>	<ul style="list-style-type: none"> <li>■ Does not connect components</li> <li>■ Includes assessments that do not reflect instruction</li> <li>■ Connects few assessments to the learning focus</li> </ul>

## *Unit Format: The Unit Plan Overview and the Daily Plan*

The major steps in planning a standards-based unit are divided into two main parts: the **unit plan overview** and the **daily plan**. The elements central to all standards-based planning are standards, essential questions and post-assessments. These items form the core of all standards-based unit planning. Once they are established, other information on the unit plan overview and the daily plan template can be completed.

### *The Unit Plan Overview*

The unit plan overview summarizes the instructional activities, essential questions, literacy strategies and habits of success to be addressed in the unit. Each item listed on the template will help teachers define how and what they will teach to help students achieve grade-level mastery of the standards. It is not necessary to complete all information at one time or in the order shown on the template. For example, the unit title is often not finalized until the unit is completed, and the teacher may not select literacy strategies until the end of the planning process.

The **course name** is the title listed on the school's master schedule and should clearly communicate the focus of the course. **Grade level** lists the grade of most students in the course (e.g., 10th, 11th, 12th). The **unit overview** provides a brief summary of the main concepts that will be taught and the unit's activities, skills, projects and assessments. The **timeframe** is the number of class blocks or periods required to complete the unit, including the post-assessment. **Acknowledgements** list specific individuals who provided information or help with the unit development.

**Prerequisites** are the specific knowledge and skills that students need to have mastered prior to beginning the unit to achieve grade-level mastery of the standards. The pre-assessment evaluates prerequisites and identifies what knowledge and skills students already have coming into the unit and any gaps or weaknesses. It is important to remember that many activities in a unit can be completed by students even if they lack some of the prerequisite skills diagnosed during the pre-assessment. Teachers should incorporate into the unit's lesson plan strategies to address knowledge and skills deficits. Students can participate successfully in the activities and receive extra help as needed.

A sample unit plan overview from a 12th-grade transitions mathematics class is shown on the following pages. The complete blank template is also available in [Appendix A](#).

Sample: Unit Plan Overview	
<b>Unit Title:</b> Move Over! You're Not in Line!	
<b>Course Name:</b> Senior Applications of Mathematics: Exploring Linear Models	
<b>Grade Level:</b> 12	
<b>Unit Overview:</b> This unit will review the concepts of linear functions, linear inequalities and linear systems of equations through an application-based format. Graphing technologies such as graphing calculators and spreadsheets will be used where appropriate. Students will work in teams to complete application-based projects throughout the unit. A content-based assessment will conclude the unit.	
<b>Timeframe:</b> 18 classes - 90 minutes each	
<b>Prerequisite Knowledge/Skills:</b> Students should have a basic understanding of variables, solving equations and graphing points on a coordinate plane.	
<b>Essential Questions</b> (open-ended to promote in-depth investigation): <ol style="list-style-type: none"> <li>1. How can we use linear models to analyze, represent and understand situations in everyday life?</li> <li>2. How does the analysis of linear functions help you relate to other mathematical concepts?</li> <li>3. How can we use linear inequalities to communicate situations in everyday life?</li> <li>4. How do you differentiate between solutions of systems of equations?</li> </ol>	
<b>Readiness Indicators:</b> Identify independent and dependent variables from application situations and create the resulting table that would show the relationship between the two variables.	
<b>State/Local Standards (include complete standard):</b> Students will use algebra to represent, analyze and solve problems. <ol style="list-style-type: none"> <li>a. Represent a given situation using algebraic expressions or equations.</li> <li>b. Solve systems of linear equations or inequalities in two variables using algebraic techniques, including those involving matrices.</li> <li>c. Simplify and evaluate algebraic expressions.</li> <li>d. Solve algebraic equations or inequalities in one variable, including those involving absolute values.</li> <li>e. Solve equations involving several variables for one variable in terms of the others.</li> <li>f. Interpret solutions in problem contexts.</li> </ol>	
<b>Acknowledgements:</b>	

Literacy Strategies (Check all that apply.)	Habits of Success (Check one per unit.)
(To be developed throughout the unit plan with ample opportunities for practice.)	
<input checked="" type="checkbox"/> Admit/Exit slips <input checked="" type="checkbox"/> Graphic organizer <input type="checkbox"/> Know/Want to Know/Learn chart (KWL) <input checked="" type="checkbox"/> Open-response questions <input type="checkbox"/> Double-entry/Two-column notes <input checked="" type="checkbox"/> Retelling <input type="checkbox"/> Reflection <input checked="" type="checkbox"/> Jigsaw reading <input type="checkbox"/> Anticipation guide <input type="checkbox"/> RAFT (Role/Audience/Format/Topic) <input checked="" type="checkbox"/> Interactive reading guide <input type="checkbox"/> Concept definition maps <input checked="" type="checkbox"/> Frayer model <input type="checkbox"/> Visual prediction guide	<input type="checkbox"/> Create relationships (Teamwork, responsibility, effective communication) <input type="checkbox"/> Study, manage time, organize (Organization, time management, study skills) <input type="checkbox"/> Improve reading/writing skills (Use reading and writing to learn strategies) <input checked="" type="checkbox"/> Improve mathematics skills (Estimate, compute, solve, synthesize) <input type="checkbox"/> Set goals/plan (Set goals, plan, monitor progress) <input type="checkbox"/> Access resources (Research, analyze, utilize)

<b>Assessments:</b>
Pre-Assessment: Use the content-based post-assessment as a pre-assessment. Do not return the test to the students or go over the solutions.
Daily/Weekly: (Included on daily activities plans)
Post-Assessment: 1. Content-based (traditional paper-and-pencil test): Post-assessment on unit content (Day 18) 2. Performance- , product- or problem-based: Teen Recreation Center Event project

## *The Daily Plan*

Standards-based units use learning cycles to teach the foundational content for each course. The **daily plan template** guides teachers to follow a learning cycle for optimal learning and encourages mastery through a series of carefully planned activities. Teachers use this plan to engage students, introduce information, and schedule time for exploration and repetition.

Writing daily plans begins only after standards, essential questions and post-assessments are defined for the unit. Each day's plan follows a template based on the learning cycle and includes space for teacher information. A checklist of appropriate strategies for each component encourages the use of a variety of activities for different learning styles.

The daily plan begins by focusing students on the day's content knowledge as they enter the classroom — while teachers may be attending to assigned duties between classes — and encourages students to immediately begin thinking about the standards. The sequence of activities establishes a routine, which is important for students, and moves the class forward in an organized manner. All parts of the sequence continue to reinforce the unit's standards.

Anticipated times are guidelines for sequencing the various components of the lesson. Although there are many separate sections listed on the daily plan template, transitions between each section flow smoothly through the class period. Teachers move through a similar set of transitions and seldom stop to call attention to a change in activity.

Teachers in training sessions often ask if they can skip steps in the daily plan. Steps can be combined and rearranged; but skipping steps should be avoided, as it can lead to an incomplete learning cycle. For shorter periods, the amount of time can be reduced proportionately or components can be merged.

Sample daily plans for 90- and 50-minutes class periods are shown on the following pages. A complete template is available in [Appendix A](#).

## Day 1 of 18

Sample 90-Minute Daily Plan: <i>Move Over! You're Not in Line!</i>	
Suggested Time	Activity
<b>Get Started</b> 3-5 minutes	Ask the class to think about the following questions: What skills from our previous studies help us to gain a better understanding of real-world mathematics? What can we do to communicate our understanding of mathematics so that our audience will be able to understand what is presented?
<b>Engage</b> 3-5 minutes	Using a picture of a vending machine, introduce and define independent and dependent variables. Discuss the possible types of money that can go into a vending machine and what happens. Define the domain. The independent variable is all monies that will work in the machine, and the dependent variable is the product available from the machine. As the discussion develops, display the domain and range in a table.
<b>Explore</b> 15-18 minutes	Divide the class into teams and, using written scenarios, have the teams identify independent, dependent and confounding variables. Confounding variables are those situations which produce the need for controls in experiments. (This will create a spiral back to the Representing Data unit, the scientific method and experiment design.) Possible sample scenarios: <ul style="list-style-type: none"> <li>■ Diet and weight</li> <li>■ Number of ice cubes and the temperature of the beverage</li> <li>■ Height and shoe size</li> <li>■ Hours worked and take home pay</li> <li>■ Salary and lifestyle</li> <li>■ Price of gas and distances traveled</li> <li>■ Factors related to plant growth</li> <li>■ Factors affecting student attention spans</li> <li>■ Homework/study time and grade earned</li> </ul>
<b>Explain</b> 17-20 minutes	Discuss the team activity and lead the class into a more abstract discussion of identifying domain and range from an equation, table or graph.
<b>Practice Together</b> (Whole Group Practice) 12-15 minutes	Working with the whole class, present an equation, a table and a graph. Have students determine the domain and range of each.
<b>Practice in Teams/Groups/Pairs</b> (Small Group Practice) 12-15 minutes	Using real-world scenarios, equations, tables and graphs, have students identify the domain and range of each.
<b>Practice Alone</b> (Individual Practice) 10-15 minutes	After surveying the teams for their understanding of domain and range, give students one representation of each to identify on their own.
<b>Evaluate Understanding</b> 10-15 minutes	Ask students to share their solutions with the class or with their study team.
<b>Closing Activities</b> 6-10 minutes	Have students turn in their individual work as a ticket out the door. Assignment: Research domain and range and bring information or facts uncovered to class. Write a journal response to the following question: "How are domain and range related to independent and dependent variables?" Resources for information can include computer searches, textbooks, dictionaries and/or interviews. Cite sources used.
<b>Resources/Materials</b>	Vending machine picture
<b>Enrichment/Extension and Accommodation/Reteaching</b>	Give the class several graphs and ask them to identify the domain and range. Give the students the domain and range and ask them to generate the graph from the data.

### Sample 50-Minute Daily Plans

Suggested Time	Grade Eight: <i>Waves in Motion</i>	Grade Seven: <i>Family Branches</i>	Grade Six: <i>Biome Hoppers</i>
<b>Get Started</b> 1-2 minutes	Ask students to complete a journal entry: List all the words you can think of that are associated with waves.	Ask students to list five traits they have.	Have students listen to audio clips of three different sounds and identify where each sound is found in nature.
<b>Engage</b> 2-3 minutes	Demonstrate waves by playing music through Windows Media Player.	Use the <i>Guinness Book of World Records</i> to show “extreme” traits (e.g., tallest, shortest, biggest foot).	Display a picture of someone snow-skiing and someone water-skiing.
<b>Explore</b> 4-7 minutes	Have students analyze wave characteristics using water in a pan.	Measure and compare foot size from a record book with the teacher’s foot or ask for volunteers within groups. <i>(Note: Adolescents are often self-conscious. Be sure to avoid embarrassing anyone.)</i>	Have students complete vocabulary Bingo sheets with various biome words.
<b>Explain</b> 8-12 minutes	Use a graphic organizer to label the parts of a wave while students take guided notes.	Give a PowerPoint presentation on chromosomes, traits and genes.	Use a graphic organizer with the lecture on biomes.
<b>Practice Together</b> 8-10 minutes	Lead the Slinky activity with the whole class.	Demonstrate use of a Punnett square to show probability of traits in offspring.	Classify examples of words that might fit in each biome.
<b>Practice in Teams/ Groups/Pairs</b> 10-12 minutes	Have students work in small groups to see how they can change waves using the Slinky and record their results.	Have students work in pairs to practice other Punnett squares.	Have students work in pairs to list examples of other words that describe specific biomes.
<b>Practice Alone</b> 4-7 minutes	Have students work individually to construct a wave using given data points on graph paper.	Have students continue practicing on Punnett squares individually.	Have students choose one biome and write a poem or song, using descriptive words and examples.
<b>Evaluate Understanding</b> 5-8 minutes	Use an oral evaluation to measure understanding through discussion of activities.	Check Punnett squares.	Lead a discussion and have students guess which biome is described.
<b>Closing Activities</b> 3-5 minutes	Answer questions and assign homework.	Answer any questions. Assign homework: Survey and list the visible traits of the people who live in your home. <i>(Note: Remember that families are not always biologically related.)</i>	Assign homework: Complete a poem or song and prepare to share in class.  Answer questions and clarify the assignment.
<b>Enrichment/Extension and Accommodations/ Reteaching</b>			Choose a music background or sound effects for the poem/song.

### *How do teachers learn to write a standards-based unit?*

- Attend a professional development workshop to learn the process and create one unit.
- Teach the unit and make notes about successes and challenges.
- Schedule time for peer review and revisions.
- Engage other faculty members in creating and using a standards-based unit over a six- to eight-week period.
- Practice writing and using additional units.
- Transition all instruction to standards-based units and lessons.

### *How can administrators support change?*

- Encourage teachers to attend professional development workshops on standards-based planning.
- Support teachers to work together in teams to plan standards-based units within and across disciplines.
- Schedule uninterrupted time for teachers to meet and plan together. Eliminate any potential roadblocks to collaborative planning.
- Assist teachers to select a standards-based unit format they will agree to use.
- Develop goals and timelines to guide administrators and teachers in developing standards-based units.
- Review schoolwide achievement data to measure deficits in understanding and skills that prevent many students from achieving at or above grade level. Present this data to teachers to help them plan units.
- Build a school-based professional library that provides information on standards-based planning. Include books, articles and periodicals.
- Develop memberships in content-specific professional organizations. Take advantage of periodicals and training opportunities in the organizations.
- Survey teachers to determine specific needs for content areas.
- Ask middle grades teachers to identify the major gaps in student achievement that prevent them from meeting high school readiness standards and ask the same questions for high school teachers regarding meeting college- and career-readiness standards.
- Schedule into the master calendar time for reviewing and revising the work completed on the unit.

## The 10 Steps for Writing a Standards-Based Unit

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The remainder of this guide is dedicated to defining and explaining the 10 steps for writing a standards-based unit. After the first step, “Choose your first topic carefully,” stop and pull together the foundational pieces of the unit: standards, essential questions and the post-assessment. When completing these steps, keep in mind that the final six steps further develop and support the first four steps.

**Step 1: Choose your first topic carefully.**

**Step 2: Identify and chunk the standards and readiness indicators that drive the instruction.**

**Step 3: Write essential questions (based on the standards) that determine exactly what you want students to know and be able to do at the end of the unit.**

**Step 4: Plan the post-assessment test and task (product, performance or problem) and establish grading criteria that show mastery of the standards.**

**Step 5: Brainstorm all possible resources.**

**Step 6: Use data to choose literacy strategies.**

**Step 7: Choose the habits of success.**

**Step 8: Plan the daily sequence for each day of the unit.**

**Step 9: Teach the unit.**

**Step 10: Increase the level of proficiency.**